REMARKS

Claims 1 through 28 continue to be in the case.

New claims 29 through 39 are being introduced.

New claim 29 is being introduced based on the Specification p.13 lines 4-11, p.16 lines 4-7 and Figs.4, 5.

New claim 30 is based on the language of claim 6.

New claim 31 is based on the language of claim 15.

New claim 32 is based on the language of claim 16.

New claim 33 is based on the language of claim 17.

New claim 34 is based on the language of claim 18.

New claim 35 is based on the language of claim 19.

New claim 36 is based on the showing of Fig. 4.

New claim 37 is based on the showing of Fig. 1.

New claim 38 is based on the showing of Fig. 1.

New claim 39 is based on the showing of Fig. 1.

New claim 40 is based on the language of claim 19 and the showing of Fig. 1.

Claim 1 is amended based on the Specification p.13 line 5.

The Office Action mailed on March 11, 2004 refers to Claim Rejections - 35 USC § 103.

2. Claims 1-14, 20 stand rejected under 35 U.S.C. 103(x) as being unpatentable over Kaga et al. (U.S. Patent No. 5,609;781).

Kaga et al. teach a device comprising a pressure flow generator (see Fig. 38-42), an automatic control unit (20), a supply capillary connected to a high frequency current supply device e.g. gas (see Fig. 38-42) and a separating nozzle having a circular cross section (2).

Claims 1, 6 and 14 of the present application as amended now require a presence of a pressure water flow generator and of an automatic water control unit.

The reference Kaga et al. shows in Figs. 38 through 42 an "assist gas source 18". In addition, the reference Kaga et al. in column 15, line 37 refers to "assist gas sources 18". Claims 1, 6 and 14 of the present application as amended require a presence of a "pressure water flow generator", which generates water flow by putting water under pressure.

Applicant urges that the pressure water flow generator of claims 1, 6 and 14 as amended is clearly different from a gas source as taught in the reference Kaga et al.. A gas source will generate a gas flow, but is not capable to generate a water flow. Therefore, the pressure water flow generator of claims 1, 6 and 14 patentably distinguishes from the teaching of a gas source (18) in the reference Kaga et al.

According to the Kaga et al. reference, column 17, line 42 "The control means 20 adjusts the gas flow quantity". Thus the control means (20) of the reference Kaga et al. is clearly controlling a gas and is therefore not an automatic water control unit as now required in claims 1, 6 and 14.

Applicant submits further that the automatic water control unit of claims 1, 6 and 14 as amended is clearly different from a gas control means (20) as taught in the reference Kaga et al.. A gas control means will control a gas flow, but is not capable of automatically controlling a water flow. Therefore, the automatic water control unit of claims 1, 6 and 14 patentably distinguishes from the teaching of a gas control means (20) in the reference Kaga et al..

The Office Action continues that the nozzle is disposed fixedly positioned and coaxial with the supply capillary (see Fig. 38-42); further, the nozzle includes at least one twisted groove, wherein the number of twisted grooves and the diameter and the length of he nozzle channel are placed in such a ratio to each other that the separating jet subjected to pressure is rotated (see Fig. 10B, 10C, 11A and 11 B).

Applicant respectfully disagrees.

The reference Kaga et al. shows in Figs 10B and 10C a "main assist gas nozzle 1" (column 8, line 26) and a "sub assist gas nozzle 2a" (column 8, lines 44 and 45). The "twisted static wings (4)" (column 8, lines 26 and 27) are associated with the "main assist gas nozzle 1".

The Office Action above identified in the reference Kaga et al. "a separating nozzle having a circular cross section (2)." However no "twisted static wings (4)" are associated with the "sub assist gas nozzle (2)" according to the reference Kaga et al. Such "twisted static wings (4)" are only associated with the "main assist gas nozzle (1)" according to the reference Kaga et al. (see Fig. 10B, 10C, 11A and 11B)

Furthermore the "sub assist gas nozzle (2) of the reference Kaga et al. is furnished with a frustroconically shaped outlet end near the jet outlet (2a).

Such frustroconical construction of the reference Kaga et al. is inappropriate for a substantially incompressible liquid like water.

The Office Action continues that Kaga et al. have all the features of the invention but Kaga et al. failed to teach a water jet device and the slope of the spiral flutes is dimensioned larger than the diameter of the nozzle channel and wherein the spiral flutes exhibit a slope angle of from about 30 to 45 degrees. It would have been obvious to one having ordinary skills in the art at the time the invention was made to substitute gas jet for water jet for dispensing. Furthermore, it would have been obvious to one skilled artisan in the art to have the slope of the spiral flutes is dimensioned larger than the diameter of the nozzle channel and wherein the spiral flutes exhibit a slope angle of from about 30 to 45 degrees to achieve a better flow and the jet is subjected to a rotating pressure.

Applicant respectfully disagrees. The reference Kaga et al. fails already to teach spiral grooves in a hollow cylinder disposed at an outlet end of the separating nozzle. With the failure of the reference Kaga et al. to teach the location of the spiral grooves in Figs 2 and 5 of the present application, applicant urges that other construction features of applicant's spiral grooves are clearly nowhere taught or suggested in the reference Kaga et al.

The Office Action continues that Kaga et al. have all the features of the invention but Kaga et al. do not mention specifically the hollow cylinder of the nozzle has a length of an inner cylinder which is from about 1 to 5 times the diameter of the inner cylinder, the width of the spiral grooves in 0.08-0.2 times the diameter of the inner cylinder of the nozzle and the depth of the spiral grooves is 0.2-0.4 times the width of the spiral grooves. It would have been obvious matter of design choice to have the hollow cylinder of the nozzle has a length of an inner cylinder which is from about 1 to 5 times the diameter of the inner cylinder, the width of the spiral grooves in 0.08-0.2 times the diameter of the inner cylinder of the nozzle and the depth of the spiral grooves is 0.2-0.4 times the width of the spiral grooves to have the appropriate ratio between the length of the nozzle and the grooves so that when the jet exiting the nozzle, it swirled.

Applicant respectfully traverses. As set forth above, the sub assist gas nozzle (2) of the reference Kaga et al. does not have a hollow cylindrical end section, but a frustroconical end section. It is no matter of design choice what form the end section of the nozzle has. Applicant submits that where the reference fails already to teach the hollow cylinder discharge end of the

nozzle and misdirects to a frustroconical end section, then the balance of the applicant's construction also distinguishes patentably over the Kaga et al. reference and such construction is more than a mere design choice over the reference Kaga et al.

The present application Claims 1-14, and 20 require "A water jet device for separating of a biological structure".

The Kaga et al. reference teaches a device for the quickest mixing of two streams of gas, but not the water jet device for separating of a biological structure, as the present application requires. Generating a turbulent gas flow is the one of the goals of the Kaga reference (see column 3, line 2: "...high purity and large turbulence to the work surface...").

In clear contrast, it is an object of the present application to improve the separating sharpness of water jet devices. Since the purposes of the reference Kaga et al. and of the present invention are completely different, a person of ordinary skill in the art intending to improve the separating sharpness of water jet devices would not look to the reference Kaga et al. for guidance.

It is a purpose of the dimensions of the details of the present application to furnish the water flow laminarity of the water jet for the specific medical treatment. Thus, the construction details of the present application are not a matter of design relative to the reference Kaga et al., since the reference Kaga et al. does not provide a construction for the same purpose as does the present applicant. The construction details of the present invention are an integral part of the present application invention and they include further patentably different features relative to the reference Kaga et al..

Claim 2 and claim 7 as amended requires that the nozzle channel is a hollow cylinder. The sub assist gas nozzle (2) of the reference Kaga et al. has a cylindrical part and a frustroconical end part.

Claim 3 requires that the spiral grooves have a rounded cross-sectional shape in view of water flow considerations. The reference Kaga et al. teaches no sectional shape of the twisted static wings (4) (Kaga et al, column 8, lines 26 and 27). No suggestion is found in the reference Kaga et al. as to what to do when water flow is concerned.

New Claim 38 of the present application requires laminar flow of the liquid for the medical purposes.

The Office Action refers to Response to Arguments.

5. Applicant's arguments filed February 06, 2004 have been fully considered but they are not persuasive. The claims have been addressed in the above paragraphs.

The Examiner does not recognize "the gas mixture performs any cutting operation" cited in the claims. The claimed invention teaches an apparatus having a nozzle with grooves so that when the gas exiting the nozzle, it rotates. Kaga et al. teaches an apparatus that performs the same function.

Applicant submits that water is essentially an incompressible medium and gas is a compressible medium. If a water stream exits a nozzle and if a gas stream exits from the same nozzle, there will be substantially different outflow patterns. Thus the water jet generator of the present invention will furnish a water jet for separating of a biological structure and presumably the nozzles of the reference Kaga et al. will deliver a gas stream of large turbulence to the work surface and promote an oxidized reaction (Kaga et al., column 3, lines 2 and 3).

Since the claims 1, 6 and 14 of the present application as amended call for a "pressure water flow generator (1)", it is not foreseen that any gas will exit

from the separating nozzle of the present invention in contrast to the response conjecture. Thus no rotating gas would be available from the water jet device of the present invention.

Applicant further points to the newly introduced Claim 29 based on the present specification page 16, lines 4-7 where the cutting action is clearly expressed. The "cutting operation" can be considered a synonym of the " (biological) structure separation" for medical treatment.

Reconsideration of all outstanding rejections is respectfully requested.

All claims as presently submitted are deemed to be in form for allowance and an early notice of allowance is earnestly solicited.

Respectfully submitted,

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